PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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203 14 Malmö

ANKOM 04. 03. 04 2004-06-03

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75129-74953

PCT

WRITTEN OPINION OF THE INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rule 66)

04-08-01

Date of mailing *(day/month/year)*	02 -06- 2004
REPLY DUE	within 60 months/days from the above date of mailing
Applicant's or agent's file reference	P12828/KDG
International application No.	PCT/SE2003/000983
International filing date *(day/month/year)*	12.06.2003
Priority date *(day/month/year)*	14.06.2002
International Patent Classification (IPC) or both national classification and IPC	C07K 14/705, C12N 5/06
Applicant	Cartela AB et al

1. ☐ The written opinion established by the International Searching Authority:
   ☐ is ☐ is not
   considered to be a written opinion of the International Preliminary Examining Authority.

2. This first (first, etc.) opinion contains indications relating to the following items:

   ☒ Box No. I Basis of the opinion
   ☐ Box No. II Priority
   ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   ☐ Box No. IV Lack of unity of invention
   ☒ Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   ☐ Box No. VI Certain documents cited
   ☐ Box No. VII Certain defects in the international application
   ☐ Box No. VIII Certain observations on the international application

Fristkod W60 + förnot
Införd 1/8-04, 1/7-04 AEA
Kollad

3. The applicant is hereby **invited to reply** to this opinion.

   When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

   How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

   Also For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4*bis*. For an informal communication with the examiner, see Rule 66.6. For an additional opportunity to submit amendments, see Rule 66.4.

   If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: 14.10.2004

Name and mailing address of the IPEA/SE
Patent- och registreringsverket
Box 5055
S-102 42 STOCKHOLM
Facsimile No. 46 8 667 72 88

Authorized officer
Patrick Andersson/EÖ
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WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.
PCT/SE2003/000983

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this opinion has been established on the basis of *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed.")*:

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished
pages _____ as amended (together with any statement) under Article 19
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.
PCT/SE2003/000983

Box No. V **Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-17 (no)
	Claims	
Inventive step (IS)	Claims	1-17 (no)
	Claims	
Industrial applicability (IA)	Claims	
	Claims	

2. Citations and explanations:

The following documents from the ISR are considered particularly relevant:
D1) Camper et al. "Distribution of the collagen-binding integrin alpha10beta1 during mouse development.", 2001, Cell & Tissue Research, vol 306, pages 107-116
D2) Tiger et al, " alpha11beta1 integrin is a receptor for interstitial collagens involved in cell migration and collagen reorganization on mesenchymal non-muscle cells", 2001, vol 237, pages 116-129
D3) WO0075187
D4) WO9638482

D1 shows alpha-10-integrin expressed together with beta1, since claims 1-2 concern the integrin/integrin heterodimer per se claims 1-2 lack novelty in relation to D1. Moreover, D1 shows that alpha-10 integrin is the dominant collagen binding integrin, during cartilage development and it seems to be involved in chondrogenesis, which involves mesenchymal stem cells and is found in the ossification groove of Ranvier, which comprises among other cell types undifferentiated mesenchymal cells.

D2 shows alpha-11-integrin expressed together with beta1, since claims 1-2 concern the integrin/integrin heterodimer per se claims 1-2 lack novelty in relation to D2. D2 further shows that alpha-11 integrin is involved in human embryonic development and expressed in mesenchymal cells next to cartilage producing cells, indicating an involvement in cartilage repair.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

D3 suggests the use of alpha-11 integrin as a marker for mesenchymal derived cells and stem cells, , for instance to study therapeutic conditions see page 10 lines 11-23. The wording *"comprising fibroblasts, muscle cells, chondrocytes, osteoblasts, mesenchymally derived cells and stem cells"* is interpreted to include mesenchymal stem cells since fibroblasts, muscle cells, chondrocytes and osteoblasts are derived from mesenchymal stem cells. Consequently claims 1-8, 10, 15-17 lack novelty.

D4 shows a method for isolation of mesenchymal stem cells using e.g. FACS (see D4 page 13 second paragraph). In D4 a monoclonal antibody (i.e. a compound) identifying mesenchymal stem cells is used. Consequently, claims 9 and 11 lack novelty.

Since all of claims 1-17 lack novelty, they also lack inventive step.

D3 is regarded as being the closest prior art to the subject-matter of claims 12-14 when concerning alpha 11 integrin

D1 does not explicitly disclose enriched mesenchymal or mammalian cells or cell populations/compositions. However the use of a marker in enrichment or isolation is obvious to a person skilled in the art. Therefore would a person skilled in the art use alpha-11 integrin when isolating or enriching mesenchymal cells.

Regarding alpha-10 integrins, an analogous reasoning can be made staring from D1.

Consequently, claims 12-14 lack an inventive step.